The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A method for esterifying wood, comprising:

(a) removing moisture from wood with a solvent or electromagnetic radiation to produce dried wood having less than about 8% water by weight;

(b) impregnating said dried wood with alkanoic anhydride; and

(c) heating impregnated wood with electromagnetic radiation to produce esterified wood having a degree of esterification from about 10% to about 25%.

2. The method of Claim 1, wherein the solvent is a carboxylic acid, a ketone, or an ether.

3. The method of Claim 1, wherein the solvent is acetic acid and the alkanoic anhydride is acetic anhydride.

4. The method of Claim 1, further comprising heating said esterified wood under vacuum to remove said alkanoic anhydride, alkanoic acid, and solvent.

5. The method of Claim 4, further comprising separating said alkanoic anhydride from alkanoic acid and solvent.

6. The method of Claim 5, further comprising converting alkanoic acid into alkanoic anhydride.

7. The method of Claim 5, further comprising recycling said separated alkanoic anhydride to be used for impregnating wood in step (b).

8. The method of Claim 1, further comprising separating and recycling said solvent to be used for removing moisture in step (a).

9. The method of Claim 1, wherein step (a) comprises removing an azeotropic mixture of solvent and water.

10. The method of Claim 1, wherein the steps (a), (b), and (c) are performed with the wood remaining within the same vessel.

11. The method of Claim 1, wherein the electromagnetic radiation used in steps (a) and (c) is radiofrequency radiation having a frequency of about 6 MHz to about 915 MHz.

12. The method of Claim 1, further comprising heating said esterified wood under vacuum with radiofrequency radiation to remove alkanoic anhydride and alkanoic acid.

13. The method of Claim 1, wherein the electromagnetic radiation used in steps (a) and (c) is microwave radiation having a frequency of about 916 MHz to about 2450 MHz.

14. The method of Claim 1, wherein moisture is removed from wood with a solvent.

15. The method of Claim 1, wherein moisture is removed from wood with electromagnetic radiation.

16. The method of Claim 1, further comprising adding alkanoic acid during impregnation of the wood.

17. The method of Claim 1, wherein the dried wood comprises less than about 6% water by weight.

18. The method of Claim 1, wherein the wood is loblolly, slash, longleaf, shortleaf, or radiata pine.

19. A method for esterifying wood, comprising:

(a) impregnating loblolly, slash, longleaf, shortleaf or radiata pine wood having less than about 8% water by weight with alkanoic anhydride, wherein the impregnation time is about 15 to about 30 minutes;

(b) heating impregnated wood to produce esterified wood having a degree of esterification of about 15% to about 22%; and

(c) removing alkanoic anhydride and alkanoic acid from said esterified wood, wherein the removal time is less than about 120 minutes to achieve esterified wood having less than about 1% combined alkanoic anhydride and alkanoic acid.

20. A dimensionally stabilized lumber product, comprising:

esterified wood made from a loblolly, slash, longleaf, shortleaf, or radiata pine, wherein said wood is esterified by the process comprising:

(a) impregnating loblolly, slash, longleaf, shortleaf or radiata pine wood having less than about 8% water by weight with alkanoic anhydride, wherein the impregnation time is about 15 to about 30 minutes;

(b) heating impregnated wood to produce esterified wood having a degree of esterification of about 15% to about 22%; and

(c) removing alkanoic anhydride and alkanoic acid from said esterified wood, wherein the removal time is less than about 120 minutes to achieve esterified wood having less than about 1% combined alkanoic anhydride and alkanoic acid.